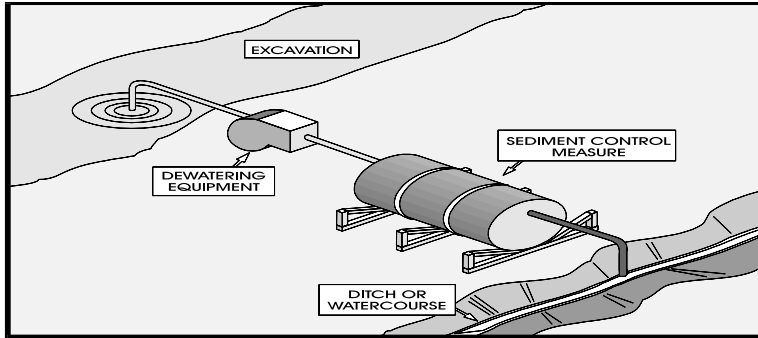


**ACTIVITY:** Dewatering Operations

CP – 02

**Targeted Constituents**

! Significant Benefit		™ Partial Benefit		" Low or Unknown Benefit	
! Sediment	" Heavy Metals	" Floatable Materials	" Oxygen Demanding Substances		
" Nutrients	™ Toxic Materials	" Oil & Grease	" Bacteria & Viruses	" Construction Wastes	

**Implementation Requirements**

! High		™ Medium		" Low	
™ Capital Costs	™ O & M Costs	™ Maintenance	" Suitability for Slopes >5%	™ Training	

**Description**

Prevent or reduce the discharge of pollutants to stormwater from dewatering operations by using sediment controls and by testing the groundwater for pollutant accumulation. This management practice is likely to create a significant reduction in sediment and a partial reduction in toxic materials.

**Approach**

There are two general classes of pollutants that may result from dewatering operations: sediment, and toxics and petroleum products. A high sediment content in dewatering discharges is common because of the nature of the operation. On the other hand, toxics and petroleum products are not commonly found in dewatering discharges unless, the site or surrounding area has been used for light or heavy industrial activities, or the area has a history of groundwater contamination. This BMP only addresses capture of sediment. If it is determined that dewatering will result in transfer or accumulation of toxics or petroleum products then the Tennessee Department of Environment and Conservation (TDEC) should be consulted before any dewater activities are performed. The following steps will help reduce stormwater pollution from dewatering discharges:

***Sediment***

- # Use sediment controls to remove sediment from water generated by dewatering. This should include techniques presented in the attached figures and the sediment trap and basin BMP fact sheets.
- # Filtration can be achieved with:
  - Sump pit and a perforated or slit standpipe with holes wrapped in filter fabric. The standpipe is surrounded by stones which filters the water as it collects in the pit before being pumped out. Wrapping the standpipe in filter fabric may require an increased suction inlet area to avoid clogging and unacceptable

pump operation.

- Floating suction hose to allow cleaner surface water to be pumped out.

# Portable Sediment Tank:

- Construct with steel drums, sturdy wood or other material suitable for handling the pressure exerted by the water and sediment. The tank should be sturdy enough to enable transfer off-site under fully loaded conditions. A stable access path should be provided for a removal vehicle.
- Use the following formula to determine the minimum storage volume of the tank:

Pump discharge (l/s) x 7.3 = m<sup>3</sup> of storage required.

Note: 1 l/s = 0.001 m<sup>3</sup>/s = 15.85 gpm.

- Design tank to allow for emergency flow over top of tank.
- Sediment tank minimum depth is 24 in. (600 mm).
- Locate tank to minimize interference with construction activities.
- Position tank for easy cleanout and disposal of trapped sediment.
- Once the water level nears top of tank, shut off pump while the tank drains and additional capacity is made available.
- Clean-out of the tank is required once one-third of the original capacity is depleted due to sediment accumulation. Clearly mark tank to show the clean-out point.

# Filter Box:

- The box selected should be made of steel, sturdy wood or other materials suitable to handle the pressure requirements imposed by the water and sediment. 55 gal. (208 l) drums welded top to bottom are normally readily available and, in many cases, will suffice.
- Use the following formula to determine the minimum storage volume of the filter box:

Pump discharge (l/s) x 7.3 = m<sup>3</sup> of storage required.

Note: 1 l/s = 0.001 m<sup>3</sup>/s = 15.85 gpm.

- Design box to allow for emergency flow over top of box.
- Make bottom of the box porous by drilling holes or by other methods.
- Place aggregate base over holes to a minimum depth of 12 in. (300 mm) (metal hardware cloth may need to be placed between aggregate and the holes if holes are drilled larger than the majority of the stone).
- Direct effluent over a well vegetated strip of at least 15 m. (50 ft) after leaving base of filter box.
- Once the water level nears top of box, shut off pump while the box drains and additional capacity is made available.
- If the stone filter does become clogged with sediment, the stones must be cleared from the inlet, cleaned and replaced.
- Clean-out of box is required once one-third of the original capacity is depleted due to sediment accumulation. Clearly mark box to show the clean-out point.

# Straw Bale/Silt Fence Pit:

- Use straw bales, silt fence, a stone outlet and a wet storage pit.
- Use the following formula to determine the minimum storage volume of the pit:

Pump discharge (l/s) x 7.3 = m<sup>3</sup> of storage required.

Note: 1 l/s = 0.001 m<sup>3</sup>/s = 15.85 gpm.

- The excavated area should be a minimum of 3 ft (1 m) below the base of the straw bales and silt fence.
  - Installation guidelines can be found under TCP-13: Silt Fences and TCP-14: Straw Bale Barrier.
  - Once the water level nears the crest of stone weir (emergency overflow), shut off pump while the structure drains down to the top of the wet storage pit.
  - The wet storage pit may be dewatered only after a minimum of 6 hours of sediment settling time. Pump effluent across a well-vegetated area or through a silt fence prior to discharge.
  - Once the wet storage area becomes filled to one-half of the excavated depth, accumulated sediment shall be removed and properly disposed.
- # Sump Pit and Perforated Standpipe Wrapped in Filter Fabric:
- Use filter fabric as required for silt fence fabric, described in TCP-13: Silt Fences, or similar material approved by the Engineer.
  - Design pit and size of standpipe according to dewatering discharge requirement.
  - The standpipe wrapped in filter fabric shall be surrounded by stones, which filter the water as it collects in the pit before being pumped out.
- # Geotextile/Fabric Filter Bags, Tubes and Packs:

There are increasingly available commercial products that filter pumped slurries. Most products utilize geotextile material or fabric in the form of various sized bags, tubes and packs.

- Design/size the filter bag, tube or pack according to the dewatering discharge requirement and manufactures recommendations.
- If it is determined that the filter bag, tube or pack is not as efficient or there is a higher potential for sediment loss while switching packs then perform this operation within a straw/silt fence pit.
- Direct effluent over a well-vegetated strip of at least 50 ft. (15 m) after leaving the filter.
- The filters must be capable of being removed from the site without tearing or other accidental loss of material. Alternatively, the filter can be placed in a slotted grate or other containment, such as a sloped dumpster, allowing for drainage and easier site removal.
- If it is determined that the sediment is “pollutant free” then the captured material may be used for grading and fill elsewhere on the site. If this is done, then properly dispose of the filter material.

### ***Toxics and Petroleum Products***

# In areas suspected of having groundwater pollution, sample the groundwater near the excavation site and have the water tested for known or suspected pollutants at a certified laboratory. Check with TDEC for their requirements for dewatering, additional water quality tests, and disposal options.

# With a permit from the TDEC, you may be able to recycle/reuse pumped groundwater for landscape irrigation, or discharge to the storm sewer. You may also be able to treat pumped groundwater and discharge it to the municipal wastewater treatment plant via the sanitary sewer with expressed written permission from the local sewer authority.

**Requirements**

- # Costs (Capital, O&M)
- Sediment controls are low cost measures.
  - Treatment and/or discharge of polluted groundwater can be quite expensive.

**Maintenance**

- # Inspect filtering device frequently and repair or replace once the sediment build-up prevents the structure from functioning as designed.
- # Accumulated sediment removed from a dewatering device must be spread on site and stabilized or disposed of at a disposal site.
- # Inspect excavated areas daily for signs of contaminated water as evidenced by discoloration, oily sheen, or odors.

**Limitations**

- # The controls discussed in this BMP address sediment only. If the presence of polluted water is identified in the contract, the contractor shall implement dewatering pollution controls as required by the contract documents. If the quality of water to be removed by dewatering is not identified as polluted in the contract documents, but is later determined by observation or testing to be polluted, the contractor shall notify the Engineer.

**Primary References**

*California Storm Water Best Management Practice Handbooks, Construction and Industrial Handbooks*, CDM et.al. for the California SWQTF, 1993.

*Caltrans Storm Water Quality Handbooks*, CDM et.al. for the California Department of Transportation, 1997.

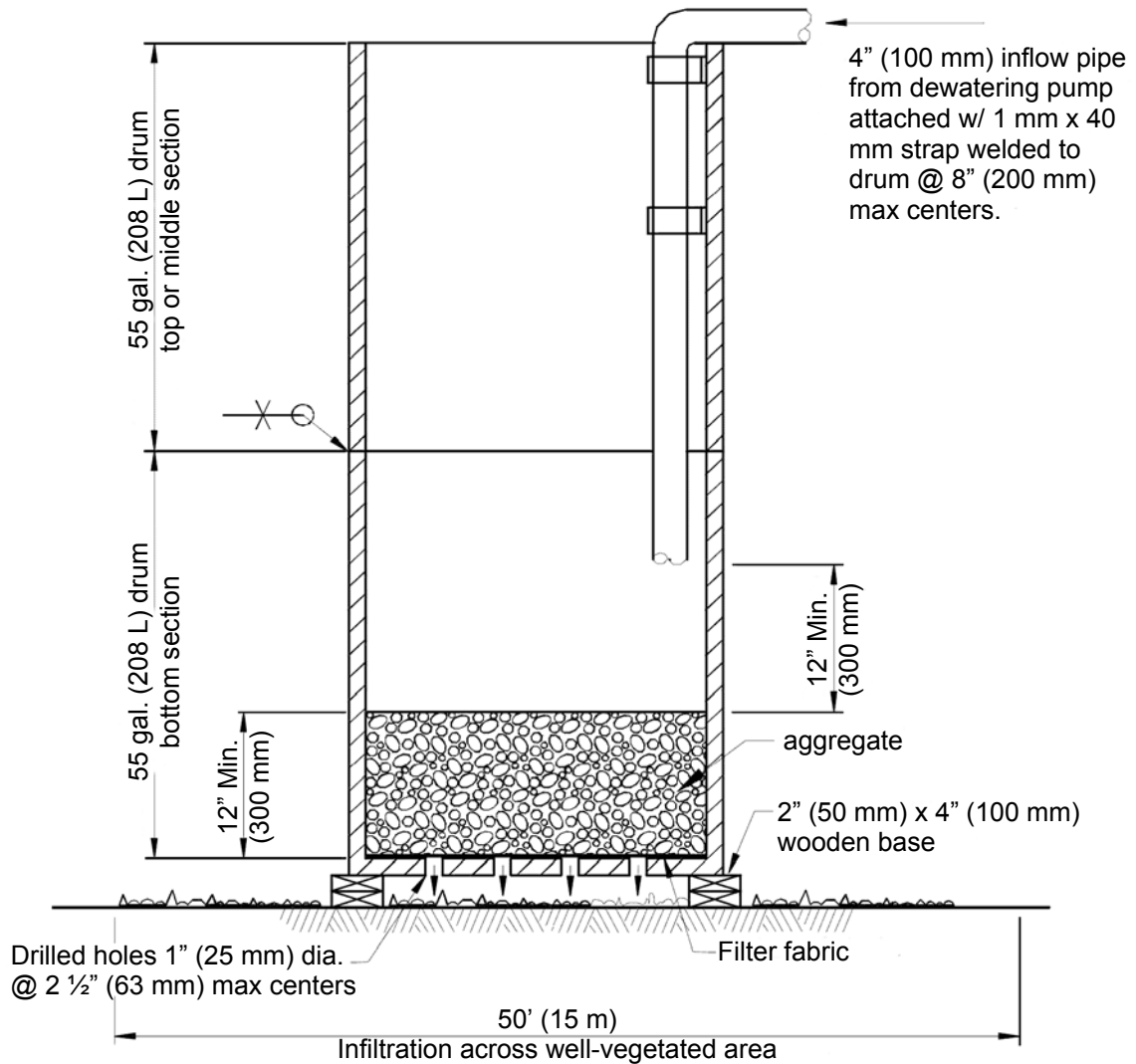
**Subordinate References**

*Blueprint for a Clean Bay-Construction-Related Industries: Best Management Practices for Storm Water Pollution Prevention*; Santa Clara Valley Nonpoint Source Pollution Control Program, 1992.

*Storm Water management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices*, EPA 832-R-92005; USEPA, April 1992.

**NOTES:**

1. Weld shall be designed for the capacity of the tank.
2. For bottom drum, remove top cover only. Remove top & bottom covers for top & middle drums.



**TYPICAL FILTER BOX**  
NOT TO SCALE

Figure CP-02-1  
Typical Filter Box

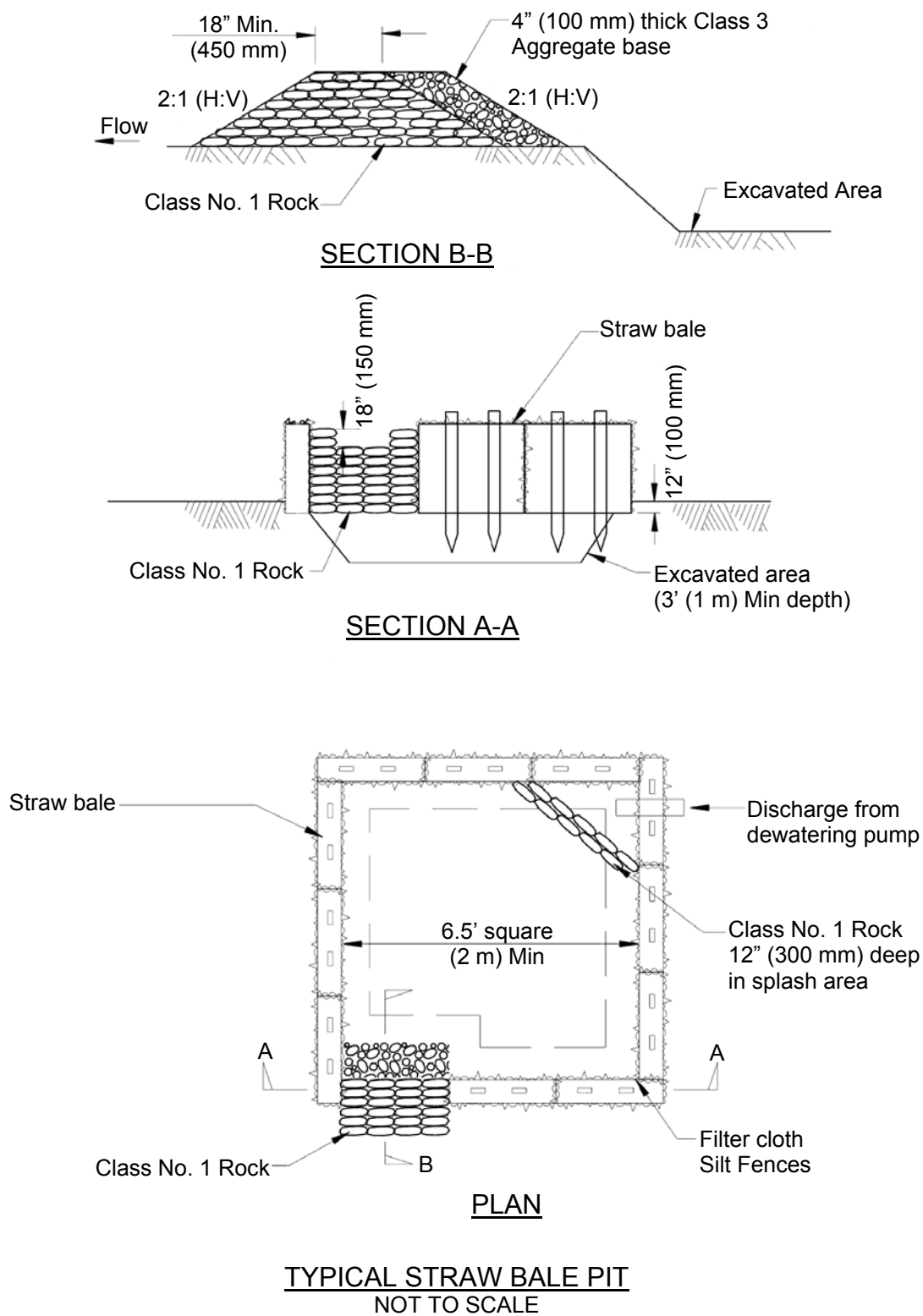
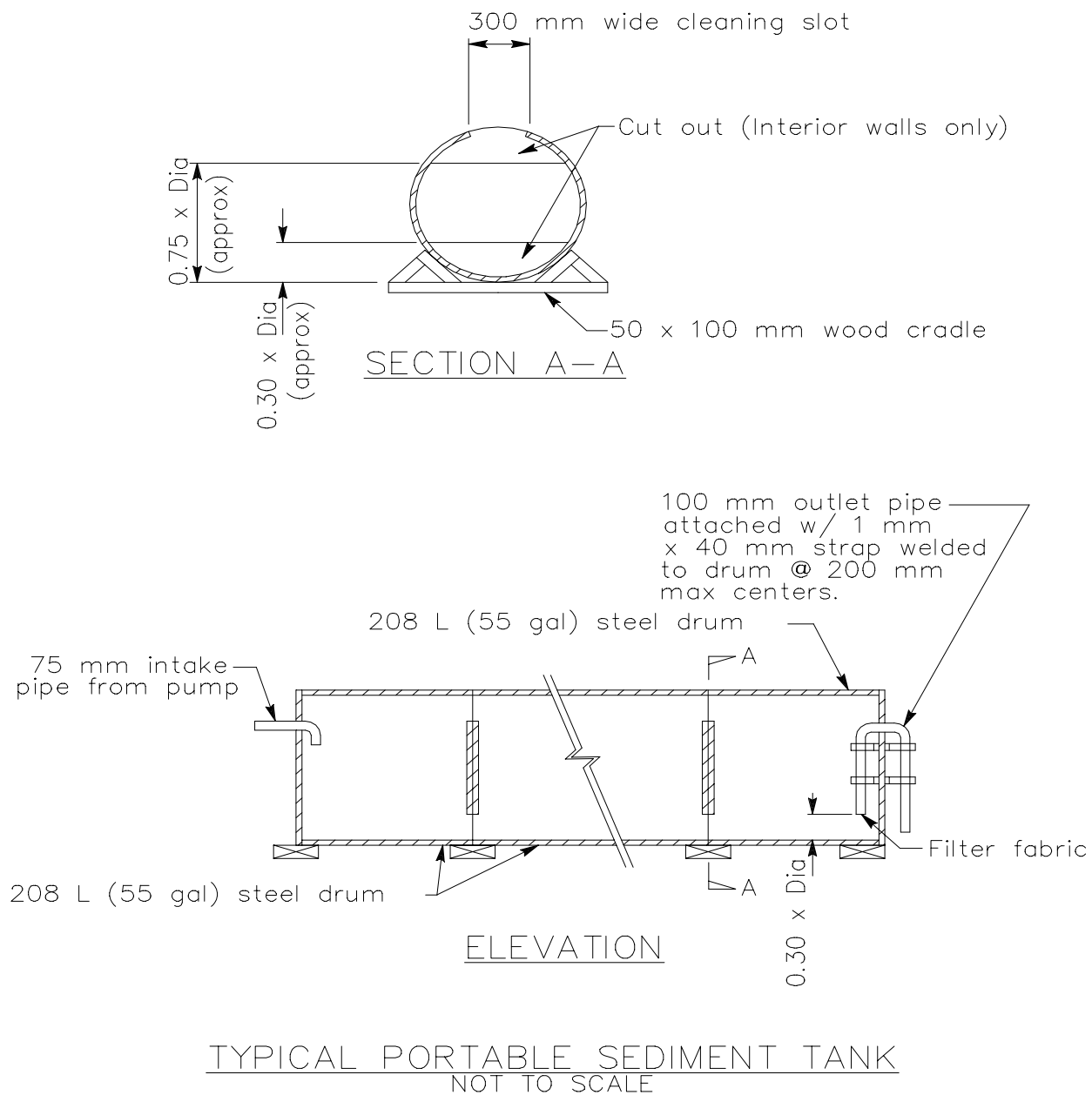


Figure CP-02-2  
Typical Straw Bale Pit



**Figure CP-02-3**  
**Typical Portable Sediment Tank**